

CLAIMS

What is claimed is:

1. A power supply controlling device of an electronic equipment, comprising:
 - a first rectifying unit rectifying an alternating voltage supplied from a power supply cord and outputting a first rectified voltage;
 - a transformer comprising a primary winding wired to receive the first rectified voltage from the first rectifying unit, and a secondary winding coupled to the primary winding;
 - a first switching unit performing an on/off operation by supplying current to the primary winding;
 - a pulse width modulating unit controlling the on/off operation of the first switching unit;
 - and
 - a power supply controlling unit outputting a signal controlling the pulse width modulating unit, wherein the pulse width modulating unit switches the first switching unit to on/off depending on a reception of a power-on signal which is supplied externally.
2. The device according to claim 1, wherein the power supply controlling unit comprises:
 - a USB interface unit;
 - a power supply switch selecting a power on/off signal in response to a power on/off signal received from a host computer connected through the USB interface unit and outputting a trigger signal indicative thereof;
 - a second switching unit connected to a power supply terminal of the USB interface unit and turned on based on the trigger signal from the power supply switch; and
 - a photo coupler comprising a first light emitting device and a phototransistor applying a signal to the pulse width modulating unit, wherein the first light emitting device is connected to the second switching unit and disposed to emit the light in response to the turn-on signal of the second switching unit, and the signal corresponds to an emission of light emitting from the first light emitting device.
3. The device according to claim 2, further comprising:
 - a second light emitting device connected in series between the phototransistor and the power supply leading-in terminal and between the power supply cord and the first rectifying unit;
 - and

a power supply sensing unit receiving the light emitting signal from the second light emitting device to sense the on/off status of the power supply switch.

4. The device according to claim 2, further comprising:

an auxiliary power supply disposed on a power supply path from the power supply terminal of the USB interface unit to the second switching unit, and supplying the power to the second switching unit.

5. The device according to claim 1, further comprising:

a second rectifying unit rectifying a voltage induced by the secondary winding of the transformer and outputting a second rectified voltage.

6. A power supply controlling device, comprising:

a first switching unit;

a pulse width modulating unit;

a power supply switch providing a power on/off signal from a user; and

a power supply controlling unit outputting a control signal to the pulse width modulating unit to control the first switching unit to perform an on/off operation corresponding to the power on/off signal from the user.

7. The power supply controlling device according to claim 6, further comprising:

a first rectifying unit rectifying an alternating voltage; and

a transformer comprising a primary winding receiving the rectified voltage from the first rectifying unit and a secondary winding coupled to the primary winding, wherein the pulse width modulation unit controls the first switching unit to perform the on/off operation by controlling the amount of current to the primary winding.

8. The power supply controlling device according to claim 6, further comprising:

a second switching unit performing a turn-on operation according to the power on/off signal; and

a photo coupler connected to the second switching unit, wherein the photo coupler comprises

a first light emitting device to emit a light in response to the turn-on operation of the second switching unit,

a phototransistor to provide the pulse width modulating unit with a signal that corresponds to the emission of the light from the first light emitting device, and
an auxiliary power supply to supply power to the second switching unit.

9. The power supply controlling device according to claim 8, wherein the pulse width modulating unit controls a duty ratio of the on/off operation of the first switching unit depending on whether the phototransistor is conducting.

10. The power supply controlling device according to claim 8, wherein when the first light emitting device emits the light in response to the turn-on operation and the phototransistor is turned on according to the light emitted, the pulse width modulating unit generates a predetermined voltage.

11. The power supply controlling device according to claim 8, further comprising:
a second light emitting device, and
a power supply sensing unit receiving the signal from the phototransistor and a signal from the second light emitting device to determine a power on/off status of the power supply switch.

12. The power supply controlling device according to claim 6, further comprising:
a third light emitting device,
wherein when a voltage output from the power supply controlling unit falls below a predetermined target value, the third light emitting device does not emit light and the pulse width modulating unit turns on the first switching unit while controlling a duty ratio of the first switching unit to maintain the voltage outputted from the power supply controlling unit at a predetermined target value.

13. The power supply controlling device according to claim 6, wherein when the power supply controlling unit is in a power-off, the power supply controlling unit is switched into a sleep mode maintaining a receiving standby status until the power supply controlling unit receives printing data or a signal corresponding to the power-on signal.

14. A system connecting a printer and a host computer, comprising:
a signal processing unit;

a printing unit;

a DC/DC converter converting a power supply voltage into a lower voltage required by the signal processing unit, and outputting the converted voltage to the signal processing unit;

an input unit receiving a printing command; and

a power supply controlling device comprising

a first switching unit,

a pulse width modulating unit,

a power supply switch providing a power on/off signal from a user, and

a power supply controlling unit outputting a control signal to the pulse width modulating unit to control the first switching unit to perform an on/off operation corresponding to the power on/off signal from the user.

15. The system according to claim 14, wherein the signal processing unit comprises:
a USB interface unit to control the printer, and
a storage unit storing printing data and programs to perform printing operations:

16. The system according to claim 15, wherein when the signal processing unit receives a power-on signal from the host computer through the USB interface unit or from the power supply switch, the signal processing unit outputs a low signal corresponding to the power-on signal to the power supply controlling device.

17. The system according to claim 15, wherein when the signal processing unit receives a power off signal from the host computer or from the power supply switch, the signal processing unit outputs a high signal corresponding to the power off signal to the power supply controlling device.

18. The system according to claim 15, wherein the USB interface unit connects the printer and the host computer, and comprises a data line carrying printing data from the host computer and a power supply line supplying with a predetermined amount of power to the printer.

19. The system according to claim 14, wherein the first switching unit comprises a field effect transistor (FET) used as a high voltage switching device.

20. The system according to claim 14, further comprising:
a first rectifying unit rectifying an alternating voltage; and
a transformer comprising a primary winding receiving the rectified voltage from the first rectifying unit and a secondary winding coupled to the primary winding, wherein the pulse width modulation unit controls the first switching unit to perform the on/off operation by controlling the amount of current to the primary winding.

21. The system according to claim 14, further comprising:
a second switching unit performing a turn-on operation according to the power on/off signal; and
a photo coupler connected to the second switching unit, wherein the photo coupler comprises
a first light emitting device to emit a light in response to the turn-on operation of the second switching unit,
a phototransistor to provide the pulse width modulating unit with a signal that corresponds to the emission of the light from the first light emitting device, and
an auxiliary power supply to supply power to the second switching unit.

22. The system according to claim 21, wherein when the signal processing unit determines that the power supply switch is turned off and the signal processing unit is provided with information corresponding to the power-on signal through the USB interface unit, the signal processing unit controls the second switching unit to not be turned on.

23. The system according to claim 14, wherein a driving voltage to operate the signal processing unit is +2.5V to +3.3V.

24. The system according to claim 23, wherein the power supply controlling device controls a power supply by applying an auxiliary power supply even when the driving voltage is not supplied.